

AMENDMENT AND RESPONSE

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Serial No.: 10/033,156

Filing Date: October 25, 2001

Attorney Docket No. 125.020US01

Title: SEALED NITRIDE LAYER FOR INTEGRATED CIRCUITS

REMARKS

Claim 1 is amended, claims 19-22 are withdrawn. Claims 1-18 are pending in this application.

Affirmation of Election

As provisionally elected by Applicant's Representative, Scott V. Lundberg, on August 30, 2002. Applicant elects to prosecute claims 1-18.

Applicant respectfully cancels remaining claims 19-22 without prejudice, and reserves the right to reintroduce them in a divisional application at a later date.

Rejection Under 35 U.S.C. §102(e)

Claims 1, 2 and 4 were rejected under 35 U.S.C. §102(e) as being anticipated by Nordstrom et al. (Publication No. US 2001/0012655 A1). A rejection under 102 requires that the reference teach every aspect of the claimed invention.

Claim 1

In regards to Claim 1, applicant has amended Claim 1 to clarify the coverage of Claim 1. Claim 1 includes the step of "forming a second layer of nitride overlaying and in contact with a first layer of nitride to form the sealing nitride layer." The Nordstrom et al. reference does not teach "forming a second layer of nitride overlaying and in contact with a first layer of nitride to form the sealing nitride layer," as is disclosed and claimed in Claim 1 of the present application. Since, every aspect of Claim 1 of the present invention is not taught by the Nordstrom et al. invention, Applicant respectfully requests the withdrawal of the rejection of Claim 1 under 35 U.S.C. §102(e).

Moreover, since Claims 2-6 depend from and further define patentably distinct Claim 1, Applicant asserts that these claims are also allowable and respectfully requests the withdrawal of the rejection of Claims 2-6. Since dependant claims 2-6 are believed allowable for the above reasons, Applicant has not addressed some of the further rejections to the dependant claims but retains the right to address said rejections if a future response is necessary.

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Claim 4

In regards to the rejection of dependant Claim 4 under 102(e), Claim 4 includes the limitation, " wherein, at least a portion of the first layer of nitride remains overlaying the oxide layer after the RIE etch is applied." The Nordstrom et al. reference does not teach "wherein, at least a portion of the first layer of nitride remains overlaying the oxide layer after the RIE etch is applied," as is claimed in dependant Claim 4 of the present invention. Please refer to Figure 25(b) of the Nordstrom et al. reference and in particular what is marked as silicon oxide (39). Accordingly the rejection of Claim 4 under 102(e) is improper and the Applicant respectfully request the withdrawal of rejection of Claim 4 under 35 U.S.C § 102(e).

Rejection Under 35 U.S.C. §103(a)Claim 7

Independent Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Nordstrom et al. A 103 rejection requires a *prima facie* showing that the art reference suggests or provides motivation to modify the reference to establish obviousness under 103. A *prima facie* showing of obviousness further requires that the prior art reference teach or suggest all of the claim limitations.

Claim 7 includes the element "forming a contact opening through the first layer of nitride and the oxide layer to expose a portion of the surface of the substrate." The Nordstrom et al. reference neither alone nor in combination teaches or suggests "forming a contact opening through the first layer of nitride and the oxide layer to expose a portion of the surface of the substrate," as is disclosed and claimed in Claim 7 of the present application. For example, please refer to Figure 25(a) of the Nordstrom et al. reference and in particular silicon oxide 42 overlaying the surface of the substrate of Figure 25(a). In addition, Claim 7 includes the element "using a reactive ion etch (RIE etch) without a mask on the substrate for a pre-determined amount of time to remove a portion of the second layer of nitride overlaying the surface of the substrate in the contact opening without removing the portions of the second nitride layer overlaying the sidewalls of the contact opening, wherein the oxide layer is sealed by the first and

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second nitride layers.” The Nordstrom et al. reference neither alone nor in combination teaches or suggests “using a reactive ion etch (RIE etch) without a mask on the substrate for a pre-determined amount of time to remove a portion of the second layer of nitride overlaying the surface of the substrate in the contact opening without removing the portions of the second nitride layer overlaying the sidewalls of the contact opening, wherein the oxide layer is sealed by the first and second nitride layers,” emphasis added, as is disclosed and claimed in Claim 7 of the present application. For example, please again refer to Figure 25(a) of the Nordstrom et al. reference and in particular silicon oxide 42 overlaying the surface of the substrate of Figure 25(a). Moreover, please refer the alternative embodiment in Figure 25(b) of the Nordstrom et al. reference and in particular disposable spacer oxide 148 and silicon oxide 39. As discussed in the specification, one of the purposes of the present invention is to seal an oxide layer with nitride layers to provide an effective ion barrier. See Paragraphs 0005, 0006 and 0027 of the present application. This is not the objective of Nordstrom et al. reference. See the objects of the invention as set out in the summary sections in paragraphs 0019-0027 of the Nordstrom et al. reference. Thus, there is no motivation or suggestion in the Nordstrom et al. reference to modify the reference to what is claimed in the present application since the Nordstrom et al. reference is addressing other problems than what the present application is addressing.

Moreover, since Claims 8-13 depend from and further define patentably distinct Claim 7, Applicant asserts that these claims are also allowable and respectfully requests the withdrawal of the rejection of Claims 8-13. Since dependant claims 8-13 are believed allowable for the above reasons, Applicant has not addressed some of the further rejections to the dependant claims but retains the right to address said rejections if a future response is necessary.

Claim 14 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nordstrom et al. Claim 14 includes the elements “implanting ions of a second conductivity type through the layer of nitride.” The Nordstrom et al. reference does not teach or suggest “implanting ions of a second conductivity type through the layer of nitride.” Although the Nordstrom et al. reference teaches implanting ions through an oxide layer to form device regions, see Figure 8 and paragraph 0098 of the Nordstrom et al. reference, there is no suggestion or motivation in the Nordstrom et al. to direct one to the use of a nitride layer instead of an oxide layer as is disclosed

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and claimed in Claim 14 of the present application. The use of a nitride layer in this manner furthers the objective of an oxide layer that is sealed by first and second layers of nitride. As discussed above, the Nordstrom et al. reference is not seeking this objective and therefore provides no suggestion or motivation to arrive at the elements claimed in Claim 14 of the present invention.

Furthermore, Claim 14 includes the element "forming a second layer of nitride over the first layer of nitride." The Nordstrom et al. reference does not teach or suggest "forming a second layer of nitride over the first layer of nitride," as is disclosed and claimed in claim 14 of the present application. The use of the nitride layers in this manner furthers the objective of an oxide layer that is sealed by first and second layers of nitride. As discussed above, the Nordstrom et al. reference is not seeking this objective and therefore provides no suggestion or motivation to arrive at the elements claimed in Claim 14 of the present invention

Accordingly, Applicant respectfully requests the withdrawal of the rejection of Claim 14 under 35 U.S.C. § 103. Moreover, since Claims 15-18 depend from and further define patentably distinct Claim 14, Applicant asserts that these claims are also allowable and respectfully requests the withdrawal of the rejection of Claims 15-18. Since dependant claims 15-18 are believed allowable for the above reasons, Applicant has not addressed further rejections to the dependant claims but retains the right to address said rejections if a future response is necessary.

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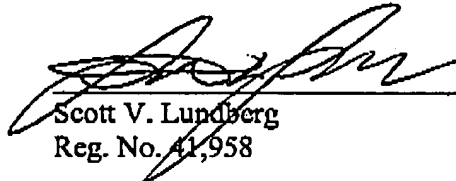
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CONCLUSION

Applicant respectfully submits that claims 1-18 are in condition for allowance and notification to that effect is earnestly requested. If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

If necessary, please charge and additional fees or credit overpayment to Deposit Account No. 502432.

Respectfully submitted,

Date: 4-10-03

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